ORIGINAL RESEARCH

Clinical Outcome Measures for Patients Attending Type 2 Diabetes Education Workshops

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Introduction

Every year 1.7 million Americans are newly diagnosed with type 2 diabetes mellitus (T2DM). Complications of the disease contribute to more than 900,000 deaths annually.[1] Despite the knowledge that A1c levels correlate with decreased rates of complications,[2] nearly one-half of patients remain uncontrolled. Successful management requires technical training, education, and support of patients in daily lifestyle decision making.[3] Consequently, physicians are faced with immense care challenges that are difficult to address in short clinic visits. "Learning to Live with Diabetes" is a one-day diabetes self-management education (DSME) workshop developed by the UCLA Diabetes Program in an effort to facilitate the acquisition of knowledge, skills, and self-confidence necessary for diabetes self-care in an efficient manner. The aim of this study is to evaluate the efficacy of our group based intervention.

Methods

Patients with T2DM were referred and enrolled from UCLA primary care and the Santa Monica Gonda Diabetes Center to our DSME workshop between October 2014 and July 2016. The workshop is delivered by a team of certified diabetes educators, including a nurse, registered dietician, pharmacist, and endocrinologist. Sessions address the American Association of Diabetes Educators seven self-care behaviors (AADE7) proven to produce improved outcomes.[4] After program completion, participants set individualized self-management goals for meal planning, physical activity, medication regimen, blood glucose monitoring, and healthy coping. Participants are scheduled for follow-up with an educator at 3-months to assess progress and reinforce self-management plans.

The primary outcome compared change in A1C levels between pre-workshop and 3-, 6-, 9- and 12-months afterward. Additionally, population characteristics, diabetes-related complication rates, glucose monitoring and weights were evaluated. IRB exemption was obtained for this study. The clinical analysis used the latest value (e.g., A1c) observed pre-enrollment and in the follow-up evaluation period. Data was analyzed using paired sample *t*-tests to assess differences in baseline and end-point measures of the group participants for the distributed measures.

Results

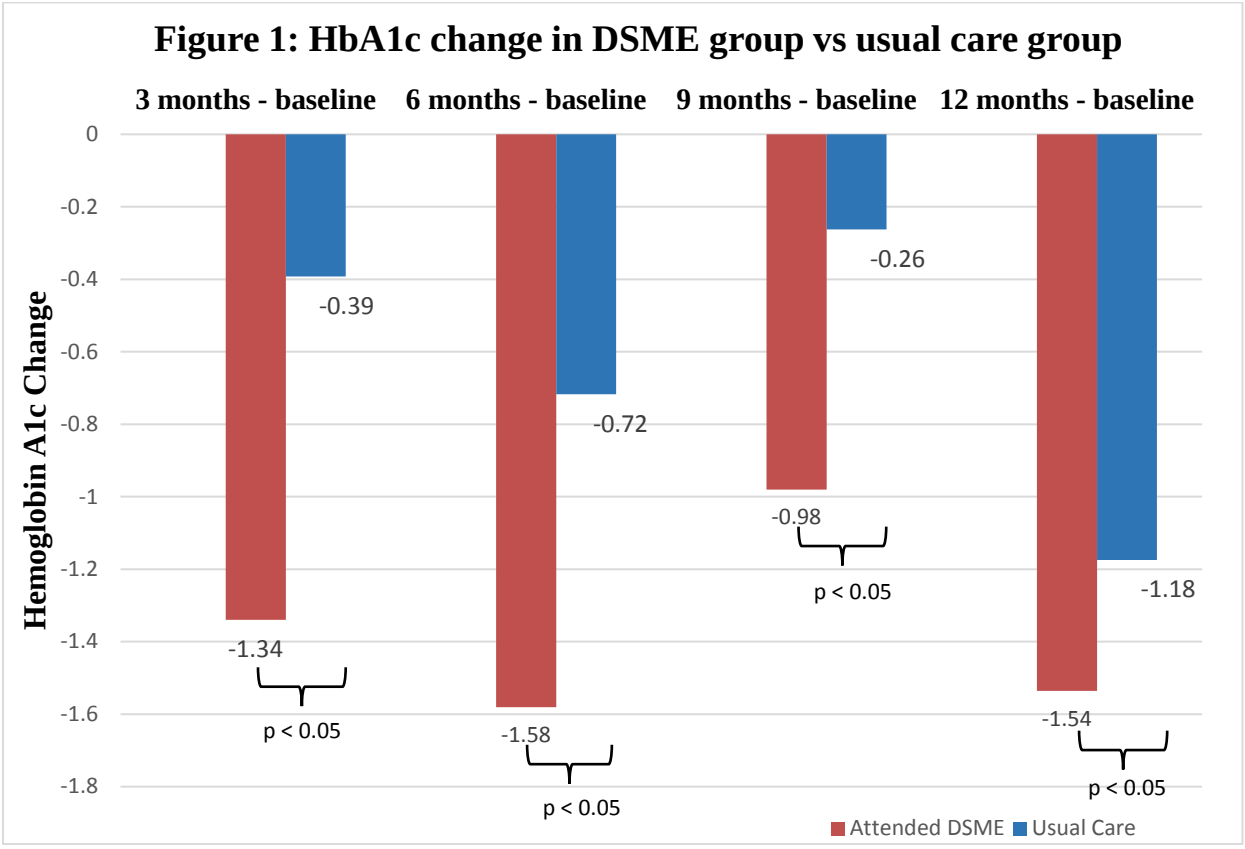
A total of 207 patients with T2DM and an A1c >7% were referred to the workshop and 148 participants attended. Patient characteristics for the complete referral group, DSME, and non-participants described as usual care groups are listed in Table 1. In addition, weight and blood sugar monitoring rates before and after DSME for all groups are listed in Table 1. Statistically and clinically significant reductions in A1c were seen at all quarterly intervals (Figure 1). A non-significant increase in glucose monitoring was seen in the DSME group when compared to usual care. An additional observed benefit was weight reduction of 3.8 pounds after the program despite improvements in A1c levels.

Discussion

As health institutions are tasked with improving quality measures in populations, highly effective, efficient, and easily scalable disease-specific programs will be required. "Learning to Live with Diabetes" was developed under recognition of the American Diabetes Association, to accommodate diabetes education for a large health care system. Our results are comparable to other DSME programs[5] and demonstrate that providing a full day program proves to be an efficient and successful method of delivering standardized diabetes education with sustained weight loss effects, improved glucose monitoring, and A1c reductions to a large diabetic population. Workshops remain underappreciated and underutilized yet are equally efficacious when compared to one-one sessions. Attendance to our DSME program was remarkable at 80% of the referred population participating considering 35% of individuals diagnosed with diabetes ever receive formal education and attrition rates for group based programs are high at 44%.[6,7] Overall, based on our experience a diabetes education workshop delivered in a one-day format improves outcomes, increases access to care, provides an engaging and effective platform for delivering the AADE7 curriculum, while allowing patients to minimize their time away from work.

Table 1 – Patient Baseline and Follow-up Characteristics

Variables	Whole Cohort (n = 207)	DSME Group (n=148)	Usual Care (n=59)	p - value
Age - years	60.7	61.2	59.5	
Male - n (%)	93 (45%)	71 (47%)	22 (37%)	
A1c at baseline	9.20%	9.4	8.8	
PMD referral - n (%)	85 (41%)	59 (40%)	26 (44%)	
Number of diabetes drugs	1.84	1.9	1.6	
Metformin use	158 (76%)	120 (81%)	38 (64%)	
Insulin use	66 (32%)	51 (34%)	15 (25%)	
Complications				
Retinopathy % (n)	30 (20%)	20 (14%)	10 (20%)	
Neuropathy % (n)	69 (33%)	51 (34%)	18 (30%)	
Diabetic Kidney disease % (n)	46 (22%)	34 (23%)	12 (17%)	
Follow-up				
Weight at baseline - lbs	212.9	211.1	217.5	NS
Weight after DSME - lbs	207.8	207.5	208.6	NS
Weight difference after DSME - lbs	-3.6	-3.8	-3.0	NS
blood sugar monitoring baseline	141 (68%)	103 (70%)	38 (64%)	NS
blood sugar monitoring at follow-up	172 (83%)	131 (88%)	41 (69%)	NS



***Acknowledgements*:** Vikram Kamdar MD, Shiri Morgan, Nancy P. Lee, Mary Deraco Sosa, Pamela Lee, Adelene Prado, Ana Valenzuela, and UCLA diabetes education team.

***Conflict of Interest Disclosures*:** None.

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